

4CF14-2014-000015

Abstract for an Invited Paper  
for the 4CF14 Meeting of  
the American Physical Society

**X-ray Nanovision: Probing the Ultra-small and Capturing the Ultr-fast<sup>1</sup>**

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Lensless X-ray Imaging or coherent x-ray diffraction imaging based is a form of microscopy that can provide detailed real-space information of both real and imaginary parts of the complex order parameters (such as strain, orbital, charge or spin). This technique is based on the reconstruction of reciprocal space diffraction and speckle “snapshot” pattern back into real space image based on phase-retrieval algorithms. I will demonstrate the applicability of coherent diffraction imaging to study nanoscale strain in Li-battery nanoparticles, ferroelectricity, ferroelasticity and magnetic domains in device relevant heterostructures. I will discuss the future applications of lensless microscopy with the emergence of 4<sup>th</sup> generation light sources.

<sup>1</sup>This work is supported by DOE through the LANL subcontract.